HighPoint Technologies, Inc.
Web RAID Management Software (WebGUI)
1 Array Management

Creating an Array

To create an array:

1. Select “Manage Array” from the menu.

2. Click the Create Array button. The create array page will appear.

3. Choose the array type you want to create from the drop-down list.

4. Enter a name for the array (this is optional)

5. If you are creating a redundant RAID array (RAID1, 5, 10, 50), select an initialization option for the array.

   **Note**: An un-initialized RAID1 or RAID1/0 array can still provide redundancy in case of a disk failure. A RAID5 array, however, is not fault-tolerant until initialization is finished.

6. If you are creating RAID5, specify a cache policy for the array:

   **Write-back**

   When the write-back setting is selected, writes to the array are cached. This will result in higher performance, but data loss may occur in case of a power failure.

   **Write-through**

   When the write-through setting is selected, writes to the array are always passed directly to the disks. Subsequent reads may still be completed from the cache, if appropriate.
7. Select disks from the **Available Disks** list.

8. Enter a capacity for the array, or use the default value (the maximum capacity for the array).

9. Click **Create**. If you have specified an initialization option, the initialization process will start automatically.

**Deleting an Array**

To delete an array:

1. Select **"Manage | Array"** from the menu.

2. Click on the **Maintenance** button. An Array Information window will appear.

3. Click the **Delete** button.

**Note:** An array in use by the operating system cannot be deleted. Any data stored on a deleted array will be inaccessible.
Adding Disk to Array

When an array member in a redundant array fails, the array will be listed as broken. A broken array can be automatically rebuilt using available-spare disks. However, if you have no spare disks configured, you can still rebuild by manually adding any Available Disk to the array. To add a disk to a broken array:

1. Select menu "Manage | Array".
2. Click the Maintenance button.
3. Click the Add Disk button.
4. If the disk is successfully added to the array, rebuild process will start automatically.

Note: If the system utilizes hot-swap capable enclosures, you can add new physical disks to the RocketRAID card in order to rebuild or modify an existing array, using the "Rescan" feature.

Verifying an Array

For a RAID 1 or RAID1/0 array, verify process compares the data of one mirror pair with the other. For RAID 5, verify process calculates RAID5 parity and compares it to the parity data on the array. Verification checks each sector on a drive. Periodic verification of an array allows the disk drive firmware to take corrective actions on problem areas on the disk, minimizing the occurrence of uncorrectable read and write errors.

To verify an array:

1. Select menu "Manage | Array".
2. Click the Maintenance button.
3. Click the Verify button to start the verify process.

Rebuilding an Array

When a redundant array enters a critical/broken state, a rebuild is necessary to restore the array’s redundancy (security). The rebuild process for an array generally starts automatically. If you have aborted a rebuild process, you can start it manually. To rebuild an array:

1. Select menu "Manage | Array".
2. Click the Maintenance button.
3. Click the Rebuild button.
4. Rebuild process will start.
Expanding/Migrating an Array

With the OCE/ORLM function, you can migrate an array from one RAID level to another RAID level and/or expand the array dynamically, even under I/O load. This function implements both Online Capacity Expansion (OCE) and Online RAID Level Migration (ORLM).

To expand/migrate an array:

1. Select "Manage | Array" from the menu.
2. Click the Maintenance button.
3. Select the target array type.
4. Click the OCE/ORLM button.
5. The OCE/ORLM page will appear. The interface is similar to the array creation wizard.

Note:

1. When expanding a JBOD array, all the original disks must be included in the target array, and these disks must be selected in the same order (as the original array). If you want to migrate a JBOD array to another RAID level, only the first member disk can be included in the target array. For example, a JBOD comprised of 3 disks (1, 2, 3), can only be "migrated" using disk 1. Disks 2 and 3 cannot be used – disk 1 would have to be combined with other disks attached to the RocketRAID card (4, 5, 6, 7, 8).
2. You cannot change an array to another type of array with a smaller capacity. In some cases, a disk may need to be added to the RocketRAID card.
3. During the OCE/ORLM procedure, the redundancy level of the array will be the lowest of the source and target arrays; e.g. if you ORLM a RAID0 array to a RAID1 array, the array will be non-redundant until the procedure is complete.
4. The OCE/ORLM process can be aborted and continued at later time. However, you should always stop the transform progress from the RAID Management software.
5. An unexpected system crash may result in data loss while performing OCE/ORLM on an array. We strongly recommend backing up data before starting the OCE/ORLM process.

Renaming an Array

To rename an array:

5. Select "Manage | Array" from the menu.
6. Click on the Maintenance button.
7. Enter a new name for the array.
8. Click the Rename button.

Note: An array running background tasks cannot be renamed.
2 Device Management

Select the "Manage | Device" function to access the device management page.

<table>
<thead>
<tr>
<th>Controller 1 (RocketRAID 182x SATA Controller)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="Device_1_5" alt="Model" /></td>
</tr>
<tr>
<td><img src="Device_1_5" alt="Location" /></td>
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<tr>
<td><img src="Device_1_5" alt="Unplug" /></td>
</tr>
<tr>
<td><img src="Device_1_5" alt="SMART" /></td>
</tr>
<tr>
<td><img src="Device_1_5" alt="Status" /></td>
</tr>
<tr>
<td><img src="Device_1_6" alt="Device_1_6" /></td>
</tr>
<tr>
<td><img src="Device_1_6" alt="Location" /></td>
</tr>
<tr>
<td><img src="Device_1_6" alt="Unplug" /></td>
</tr>
<tr>
<td><img src="Device_1_6" alt="SMART" /></td>
</tr>
<tr>
<td><img src="Device_1_6" alt="Status" /></td>
</tr>
<tr>
<td><img src="Device_1_7" alt="Device_1_7" /></td>
</tr>
<tr>
<td><img src="Device_1_7" alt="Location" /></td>
</tr>
<tr>
<td><img src="Device_1_7" alt="Unplug" /></td>
</tr>
<tr>
<td><img src="Device_1_7" alt="SMART" /></td>
</tr>
<tr>
<td><img src="Device_1_7" alt="Status" /></td>
</tr>
</tbody>
</table>

Change Device Settings

Depending upon the capabilities RAID controller and hard disks drives in use, several configurable device settings may be available: Read Ahead, Write Cache, TCQ, and NCQ. Each feature can be enabled or disabled individually, for each hard disk.

S.M.A.R.T Status

You can view S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) data about a particular hard disk to help troubleshoot problems that occur. You can also setup periodically S.M.A.R.T. status checking to send notification messages when S.M.A.R.T. thresholds are exceeded.

To view the S.M.A.R.T status of a hard disk:

1. Select "Manage | Device" from the menu.

2. Click the "SMART" link to display the S.M.A.R.T information page.
### S.M.A.R.T. Status Continued

**Model Number**: WDC WD2500ID-00GBB0  
**S.M.A.R.T**: Enabled  
**Status**: OK

#### S.M.A.R.T Attributes

<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>Threshold</th>
<th>Worst</th>
<th>Value</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Read Error Rate</td>
<td>51</td>
<td>200</td>
<td>200</td>
<td>OK</td>
</tr>
<tr>
<td>2</td>
<td>Spin-up Time</td>
<td>21</td>
<td>105</td>
<td>108</td>
<td>OK</td>
</tr>
<tr>
<td>3</td>
<td>Start/Stop Count</td>
<td>46</td>
<td>100</td>
<td>100</td>
<td>OK</td>
</tr>
<tr>
<td>4</td>
<td>Re-allocated Sector Count</td>
<td>140</td>
<td>200</td>
<td>200</td>
<td>OK</td>
</tr>
<tr>
<td>5</td>
<td>Seek Error Rate</td>
<td>51</td>
<td>200</td>
<td>200</td>
<td>OK</td>
</tr>
<tr>
<td>6</td>
<td>Power-on Hours Count</td>
<td>0</td>
<td>99</td>
<td>99</td>
<td>OK</td>
</tr>
<tr>
<td>7</td>
<td>Spin-up Retry Count</td>
<td>a</td>
<td>51</td>
<td>100</td>
<td>OK</td>
</tr>
<tr>
<td>8</td>
<td>Drive Calibration Retry Count</td>
<td>b</td>
<td>51</td>
<td>100</td>
<td>OK</td>
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<tr>
<td>9</td>
<td>Drive Power Cycle Count</td>
<td>c</td>
<td>0</td>
<td>100</td>
<td>OK</td>
</tr>
<tr>
<td>10</td>
<td>HDA Temperature</td>
<td>c2</td>
<td>0</td>
<td>253</td>
<td>103</td>
</tr>
<tr>
<td>11</td>
<td>Relocation Event Count</td>
<td>c4</td>
<td>0</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>12</td>
<td>Current Pending Sector Count</td>
<td>c5</td>
<td>0</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>13</td>
<td>Off-line Scan Uncorrectable Sector Count</td>
<td>c6</td>
<td>0</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>14</td>
<td>Ultra ATA CRC Error Rate</td>
<td>c7</td>
<td>0</td>
<td>253</td>
<td>200</td>
</tr>
<tr>
<td>15</td>
<td>Multi-zone Error Rate</td>
<td>c8</td>
<td>51</td>
<td>135</td>
<td>200</td>
</tr>
</tbody>
</table>

#### Preferences

- Check "Poll this disk every 1 Minutes".

**Note**: S.M.A.R.T attribute data is drive-specific. The software includes a list of definitions for popular drive models/manufacturers. Unknown S.M.A.R.T. attributes will be shown as "unknown". You can add the attribute definitions for your drive in the file smart.def (which resides in the software installation directory).

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**Rescan Devices**

When you physically add drives to the controller while the system is running, you can rescan the controller to reflect the change.

**To rescan the devices:**

1. Select menu "Manage | Device".

2. Click "Rescan Devices" button.

**Note**: When you are hot-plugging an entire array, run rescan only after all array members (hard disks) have been physically plugged or unplugged from the system. You can rescan all the devices at once using the Rescan function on the **Array Management** page.
3 Configuring Spare Disks

To configure spare disks attached to the RocketRAID card, select the "Manage | Spare" function. The Spare Pool Management page will be displayed.

<table>
<thead>
<tr>
<th>Spare Pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device_1_5 WDC WD2500JD-00G8B0 249.98 GB</td>
</tr>
</tbody>
</table>

[Remove Spare]

<table>
<thead>
<tr>
<th>Available Disks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device_1_6 FUJITSU MPG3204AH 20.40 GB</td>
</tr>
<tr>
<td>Device_1_7 WDC WD2500JD-00G8B0 249.98 GB</td>
</tr>
<tr>
<td>Device_1_8 ST315320A 15.23 GB</td>
</tr>
</tbody>
</table>

[Add Spare]

**Adding a Spare Disk**

To add a spare disk, select a disk from the Available Disks list and click Add Spare button. This will add the disk to the Spare Pool list.

**Removing a Spare Disk**

To remove a spare disk, select it from the Spare Pool list and click the Remove Spare button. This will remove the disk from the Spare Pool list.
4 Managing Events and Tasks

The HighPoint Web RAID Management Software automatically logs all controller related events that have occurred (for all controllers/cards managed by the software). In addition you can configure E-mail Notification to receive information about these events (see Section 5 Settings)

View Events

To view logged events, Please select "Event" from the menu. The Event Management page will be displayed.

Click the Clear button to clear the event log.

Managing Tasks

With HighPoint RAID Management Software, you can setup background rebuild and verify tasks to help maintain the integrity of your drives and data. The tasks can be scheduled periodically.

You can select menu "Task" to enter Task Management page.
Managing Tasks Continued

The **Tasks List** shows all added tasks.

### Scheduling a Task

**To add a task schedule:**

1. Select the array that you want to verify or rebuild.
2. Enter a name for the task.
3. Configure the frequency for the task.
4. Check the **Submit** button.

### Delete a Scheduled Task

**To delete a task schedule:**

1. Select a task from the **Tasks List**.
2. Click the **Delete** button.
5 Settings

Select the "Settings" option to access Settings page.

**Restrict to localhost access**

If this option is selected, the HPT Web RAID Management Service will refuse any Remote Access request. Please connect to the local machine by entering "localhost" in the URL bar.

**Change Listening Port**

This is the TCP port number utilized by the HighPoint RAID Management Service in order to communicate with the management console and web browser software. When you connect to the service, the port value you enter must be in accordance with the system port value on the service. The default value is 7402.

Enter a new port number and click the “Change Port” button to change the listening port.
Change Password

Enter a new password and click the “Change Password” button to change the current user's password. Configure E-mail notification

Enabling E-mail notification:

To configure E-mail notification:

1. Select the "Enable Event Notification" option.
2. Enter the appropriate information for the SMTP server.
3. Click the "Change Setting" button.

Note: The software does not currently support SMTP servers that require user authentication.

To add a Recipient:

1. Enter the necessary information for the desired recipient.
2. Click the Add button.

To test E-mail notification:

1. Enter the necessary information for the recipient.
2. Click the Test button.